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(56) Documents Cited

GB 2284560 A GB 2271262 A
GB 2252705 A GB 2231189 A
GB 2229371 A WO 1997/010578 A1
<http://www.indiaparenting.com/funtime/difference/>
Spot the Difference

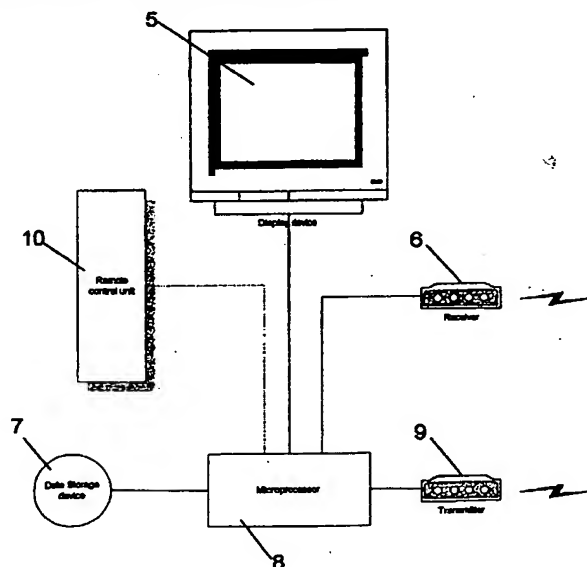
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Online:WPI,EPODOC,JAPIO; Internet:Google

(54) Abstract Title

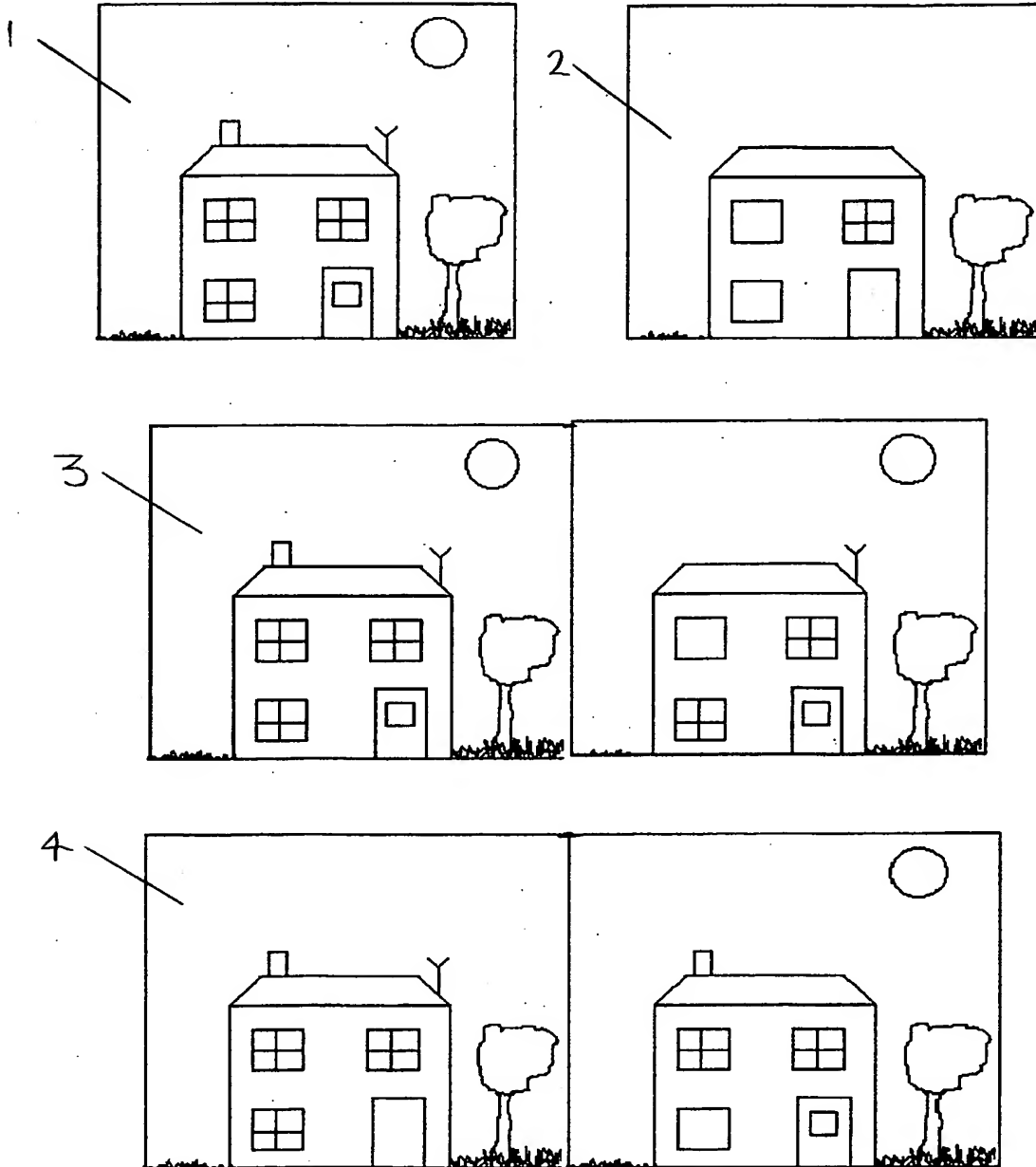
Apparatus for playing a spot-the-difference game or the like

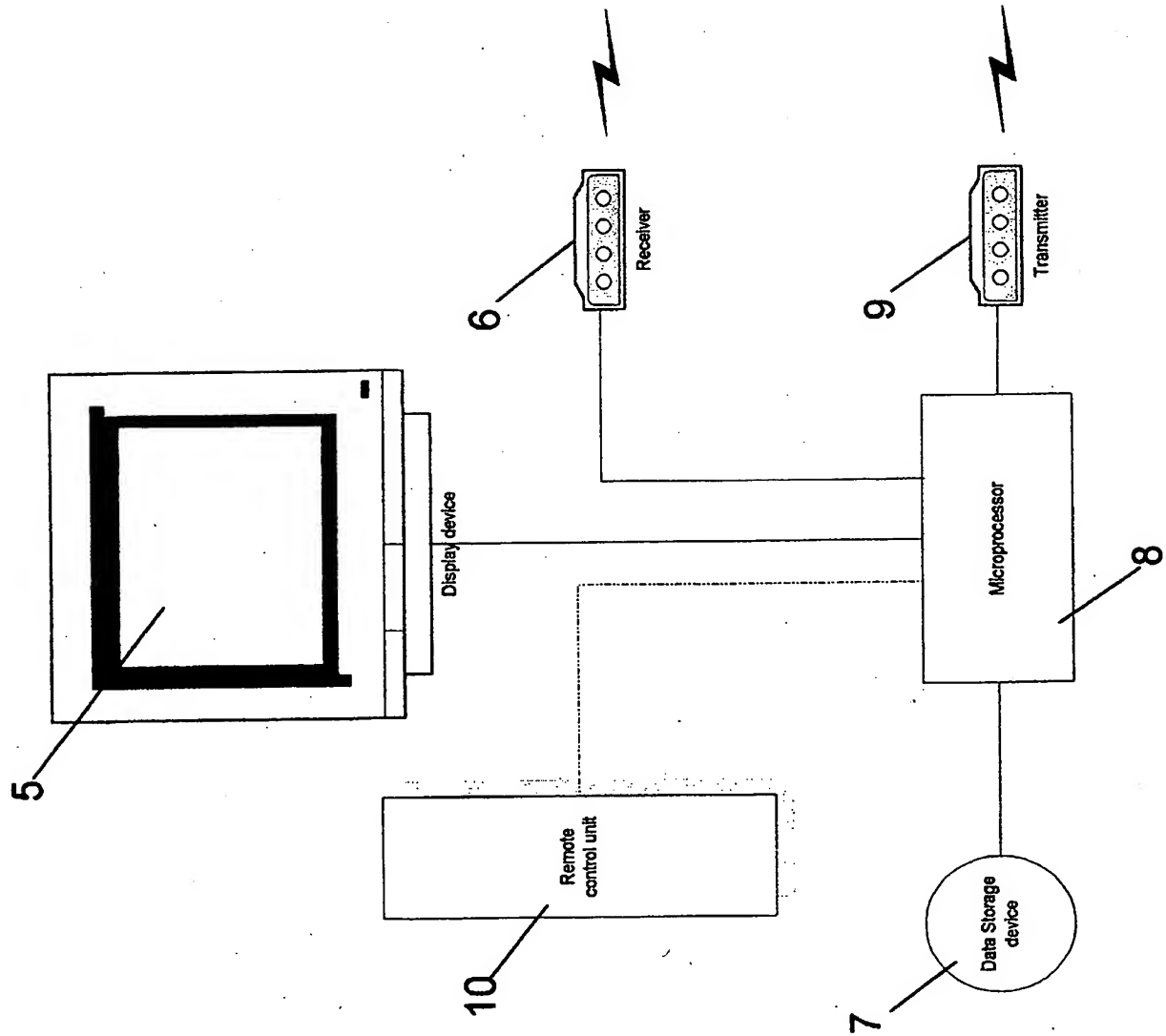
(57) A receiver 6 or transmitter 9 for use in a broadcast spot-the-difference game which comprise means for blocking image pairs which are similar to previously displayed image pairs. Preferably the receiver or transmitter incorporates a memory arranged to store image differences to prevent the repeated display of image pairs with the same differences. In a further embodiment game apparatus and method are described in which image processing means are used to receive two similar input images and generate a mixed output image for playing a spot-the-difference game. Optionally prizes may be given out for successfully identifying the differences in the images and the output may be transmitted to a remote location. More than one output stream can be generated from the same pair of input streams. The image mixing apparatus may be implemented in either a transmitter or receiver arrangement.



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Games playing method and apparatus

The present invention relates to the apparatus and method for playing a spot-the-difference competition or the like, particularly but not exclusively on a broadcast-receiving device, e.g. television set-top box. The invention relates particularly but not exclusively to interactive TV systems.

In a spot-the-difference competition an entrant compares at least two images which are generally similar but differ in at least one respect. The entrant uses his skill and judgement to determine the difference or differences. These images may be any visual depiction such as a photograph illustration or the like, and may be displayed on a television, video monitor or other display device.

In patent GB 2284560 there is described the apparatus for playing a spot-the-difference competition, where a player is presented with at least two images that are similar but different in at least one respect and the player has to select or indicate the area or areas of difference. In patent application GB 2,272,262A an electronic spot-the-ball apparatus is disclosed in which a video sequence of a ball game is displayed followed by a frame of the video sequence edited to remove the ball.

In GB 2,229,371A a variation of the spot-the ball game apparatus is described in which a video sequence of a ball game is displayed with the ball removed. The video then freezes to display the final frame of the sequence and the player is instructed to select an area or point on the frame where he judges the ball to have been. This apparatus employs two optical disk players which display respective video sequences of the game with and without the ball.

However with the introduction of interactive TV there are a number of problems with such a system. Firstly there would be a significantly higher number of players and games played and unless the library of images were vastly bigger and regularly updated, players would quite quickly learn all the areas of differences on the images. This could be very costly, especially with the rates of licensing images for broadcast use, since each set of images has to be edited.

An object of the present invention is to alleviate at least some of the above disadvantages.

In one aspect the invention provides a receiver arranged to receive and display, for use in a broadcast spot-the-difference game, at least one pair of images which are similar but which differ in at least one respect, the receiver comprising means for blocking the display of image pairs which are similar to previously displayed image pairs.

For example the receiver may incorporate a memory arranged to store image differences between the two images of a said pair and processor means arranged to prevent the repeated display of image pairs with the same image differences.

In another aspect the invention provides a transmitter arranged to transmit, for use in a broadcast spot-the-difference game, at least one pair of images which are similar but which differ in least one respect, the transmitter comprising means for blocking the transmission of image pairs which are similar to previously displayed image pairs.

For example the transmitter may incorporate a memory arranged to store image differences between the two images of a said pair and processor means arranged to prevent the repeated transmission of image pairs with the same image differences.

In another aspect the invention provides games playing apparatus for playing a spot-the-difference game or the like, the apparatus comprising image-processing means arranged to receive two similar input images and to generate a mixed output image from said similar images, selection means operable by the player to identify perceived characteristics of said output image, and means for generating an output signal indicative of the identification of perceived characteristics made by the player.

This arrangement enables a variety of output images to be obtained to be obtained from a given pair of input images and enables the licensing costs per output image to be reduced.

Preferably said image-processing means is arranged to transfer selectively features from at least one of said similar images to generate said mixed image. The mixed image can be used as one of the images to be compared with another image in a spot-the-difference game.

Preferably said image-processing means is arranged to vary the selection of transferred features to generate different output images from a given pair of input images.

Preferably said image-processing means is arranged to vary said selection in dependence upon a previous selection from the same pair of input images.

This feature enables the apparatus to avoid undue repetition of the images presented to the player.

In one embodiment said image-processing means is arranged to vary said selection in dependence upon a random or pseudo random variable.

In preferred embodiments said image-processing means is arranged to process two similar video input streams and to generate a mixed video output stream therefrom.

In one embodiment the apparatus comprises a receiver arranged to receive a broadcast spot-the-difference competition from a broadcaster transmitting the game software, images, images related data and at least two images which are similar but different in least one respect, the receiver being arranged to receive the said game software, data and images from the said broadcaster, and being provided with comparison means to compare and determine whether said images and image(s) related data has previously been received and /or stored, storage means to store said images and images related data, display means to display said at least two images, means operable by a player to indicate the position or area of apparent difference(s), means to determine the player's selection and means to compare the players selection(s) with the position, area or nature of the apparent difference(s) from said images related data.

In this specification image related data refers to data including but not limited to an image identifier, (i.e. name, number,) the location (x1, y1 upper left hand corner and x2, y2 lower right hand co-ordinates) of an area difference and an area of difference identifier, (i.e. name, number -1st, 2nd, 3rd etc.)

The spot-the-difference game or competition may be available on the Internet, interactive TV, an amusement machine, mobile phone, wireless device or PDA for example. The competition may for example be free to enter for the purposes of advertising, promotion or may be a pay per play type game / competition.

In one embodiment of the present invention the player is presented with a predetermined number of images with differences and is scored according to the time he takes to find the differences in the images.

In another aspect the invention provides a method of processing two similar input images to generate a mixed output image for use in a spot-the difference game or the like, wherein features of the input images are selectively transferred to the output image and the selection is varied to enable more than one output image to be generated from a given pair of similar input images.

In a another embodiment the similar input images are frames of respective video input streams and the output image is a frame of a video output stream, whereby varying said selection enables more than one video output stream to be generated from a given pair of similar video input streams.

The competition may for example be arranged so that the player may lose points or time for inaccurately selecting an area of difference or by selecting a "PASS" feature which would enable him to move to the next set of images and complete the game.

The apparatus may for example be integral to a set-top box; computer, television, mobile phone, PDA or other device that has the ability to receive a transmitted interactive broadcast, comprising video images, graphics, software and data.

The video, graphics and/or data may for example be transmitted by means of a satellite, cable network, terrestrial transmission, telephone network or a wireless communications (eg cellular) device.

The images and data may optionally be compressed, encrypted, encoded, in digital or in binary fashion for the purposes of faster transmission and security or a combination thereof.

The images are preferably copy protected in order to prevent the player from capturing or copying the images in order to prevent fraud.

In another aspect the invention provides a transmitting arrangement for broadcasting a spot-the-difference game programme or the like, the transmitter being arranged to process two similar video input streams to generate a mixed output video stream and to vary the mixing between the video input streams, thereby to generate more than one video output stream from the same pair of video input streams.

Yet in another aspect of the invention the images maybe rotated vertically and /or horizontally or they may be mirrored in order let the player beleive that another image has been presented to him /her

Preferably the transmitting arrangement is arranged to transfer selectively features from at least one of said similar video input streams to generate said video output stream .

Preferably the transmitting arrangement is arranged to vary said selection in dependence upon a previous selection from the same pair of video input streams.

Preferably the transmitting arrangement is arranged to vary said selection in dependence upon a random or pseudo random variable.

Preferably the transmitting arrangement is arranged to receive signals from remote players indicative of a perceived characteristic of the video output stream and to score said signals on the basis of a comparison with an actual characteristic of said output stream.

In one embodiment of the present invention at least two images are displayed, preferably simultaneously. Although these images will be generally similar, at least one of them will have been previously edited in such a way that it is made visually different in at least one respect from the other (comparison) image displayed. The visual difference displayed may be of any observable type.

In another embodiment of the present invention, iin order to save bandwidth and reduce the number of images needed, two images may be broadcast, one edited with a number of difference and the other not. In this embodiment, when a game is played the two copies of the unedited image are displayed on the screen, side by side. The game

software then randomly selects and copies some of the areas of differences from the edited image and superimposes them, at the same position, onto either of the two unedited images being displayed. The differences along with their locations are then electronically stored. This way the next time the game is played, the software checks to see which images the player has seen and which differences he was presented with in previous games and it then determines which differences to present him. By using this method the images can be used a number of times without the player learning the differences in the pictures. To further to enhance this feature the software may present some previously shown differences from a previous game and some unseen differences. This embodiment of the invention preferably scores the player's selection locally.

The machine may optionally have the means to display the number or otherwise inform the player of visual differences discernable in the images or sets of images displayed.

A timing device may optionally be employed at the time of the player's selections to limit the amount of time a player has to choose the location of the visual difference or differences (or otherwise respond), or both.

When the player has successfully selected the area or areas of difference, a prize may be awarded according to the games award structure. This prize may be for example be cash, credits, points, tickets, tokens or to the progression to another game or another portion of the same game involving the same or other skills, or the like.

If the game is played for prizes, the apparatus may optionally also have the means to control the play in accordance with the success of a player in correctly identifying the requisite characteristic of the displayed image (eg a difference from a comparison image) in order to maintain a predetermined ratio of income to pay-out.

The apparatus may optionally have the means to store a number of images, with and without differences along with their relevant image related data.

In use of a typical embodiment, when it is time, for a player to respond, the player will use his skill and judgement to choose the region or regions of the visual difference or differences in the image or images, by means of a remote control unit, mouse, 3D mouse, buttons, joystick, touch-screen, or other pointing device or selecting device or a combination thereof.

The player's selections are then checked to see whether the selected region or regions selected are coincident with the predetermined region or regions of difference.

In a variant of this embodiment the player's selection(s) data and /or time score may be transmitted to a remote online computer or the like, for the entry into tournament competition played (possibly for larger prizes) by competing players using similar apparatus (not shown) at diverse locations, or for checking the accuracy or inaccuracy of his selection(s). In this case the remote computer would electronically confirm (e.g.

email) the player's entry into the tournament competition along with a score and his selection data. Depending on the outcome of the competition the player may be notified electronically (e.g. email) at a later time, of his win or loss.

The machine may optionally incorporate the means to indicate to the player, through displaying a suitable mark or other display, the area or areas the player has selected either correctly or incorrectly. The apparatus may for example have the means to determine the location or co-ordinates of the area selected by the player, and the means to determine whether the location or region of the area or areas chosen are coincident with the location of the predetermined area or areas of the observable difference or differences.

In other embodiments the player may be asked to otherwise describe the nature or location of the observable difference or differences of the image or images displayed by, for example selecting an answer from multiple answers displayed.

The images may optionally be compressed and /or may for example be from a live broadcast. They may also optionally be encrypted and /or copy protected to prevent unauthorised viewing, copying, or saving in order to prevent fraudulent use.

Depending on the embodiment of the present invention the machine may have the means to indicate to the player the accuracy or inaccuracy of his selections either during or after the selection process, for example.

A timing device may optionally also be employed in order to time and / or score the player according to the speed in which he makes his selections or selects the correct area or areas of difference or differences in the image or images. The game may be arranged so that the player loses points /time for inaccurately selecting an area of difference.

A preferred embodiment of the present invention will now be described by way of example only with reference to the accompanying illustrations, Figure 1. Shows the two input images, unedited image 1 and edited image 2 and two possible processed output images, processed image 3 and processed image 4. The features (difference(s) may be additions or subtraction of features) Figure 2, which is a block diagram of the components and operable parts necessary in this particular embodiment of the present invention.

A machine of the example depicted comprises a monitor 5, in order to display all video images and graphics, microprocessor 8 which is programmed to control all other components of the machine in ways dependent upon the nature of the components, and the nature of a particular game.

A receiver 6 which receives all images, software, graphics and data from the broadcaster (not shown) is also provided. This receiver 6 may have the means to receive video, graphics, software, programmes, sound and data from a satellite, cable

network, terrestrial transmission or telephone network. Also provided is a transmitter 9 to transmit data back to the broadcaster. The transmitter 9 may transmit this data by means of a telephone network, cable network, satellite, terrestrial or a wireless (cellular) transmission.

Also provided is a data storage device 7, a hard disk, CD-ROM, RAM, EEPROM or other memory or recording medium or combination thereof which stores program (software) controlling the process of the game, image related data, data related to previously stored / shown images and or areas of differences, the various components and the basis of all video images, as well as graphics to be displayed on monitor 5. This storage device 7 may also be removable i.e. smartcard, and it may be of a non-volatile nature that can only be electronically altered or erased, which may automatically executed at pre-set times (i.e. every week, every 100 games, etc.).

A remote control unit 10 for making selections, alternatively a mouse, keyboard, joystick or other pointing or selecting device may be used. In this embodiment the remote control unit 10 allows the player to interact manually with the machine.

The broadcaster may transmit the images and image related data randomly without repeating this may be achieved by means of a timing device or the like.

When the player selects from the monitor 5 using remote control unit 10 to play a spot-the-difference competition, a signal is sent from the remote control unit 10 to the microprocessor 8. The microprocessor 8 then instructs the receiver 6 to receive the appropriate images, images related data, graphics and game control software, from the broadcaster. Once the receiver 6 receives images and image related data from a broadcaster, the image-related data is compared with previously received, shown images stored on data storage device 7 by means of the microprocessor 8. If a match is made the images and images related data is blocked, and the microprocessor then instructs the receiver to receive alternative, not stored or shown images or image related data. Alternatively If no match is found then the image along with its image-related data is stored on data storage device 7. Then when the game software requests a image or images for the game, the image(s) are displayed on display device 5 and the image related data is then sent to microprocessor 8 for comparing the player's selections with the actual areas of differences.

As the images are required the game control software stored on data storage device 7 instructs microprocessor 8 to retrieve, decompress and or decrypt the appropriate images from data storage device 7 and display them on monitor 5.

When the player selects a region or regions on monitor 5, using remote control 10, where he believes the area or areas of difference or differences are, the player's selections are sent by remote control unit 10 to microprocessor 8, which determines the area selected, and contains the means to compare this with a predetermined region or regions from the image related data.

Microprocessor 8 then instructs monitor 5 to display the accuracy or inaccuracy of the players selection(s), through a suitable display mark or other display, to indicate the area or areas the player has selected on monitor 5.

The predetermined region or regions data may have been transmitted along with the images and the game control software, for an immediate comparison for an instant win type competition.

In the case where the predetermined region or regions are stored on a remote online computer (not shown), transmitter 9 would then transmit the player's selection(s) to this remote online computer for comparison and/or scoring. The remote online computer may then transmit back to the player the accuracy or inaccuracy of his selection(s), which may then be displayed on monitor 5.

Claims

1. A receiver arranged to receive and display, for use in a broadcast spot-the-difference game, at least one pair of images which are similar but which differ in least one respect, the receiver comprising means for blocking the display of image pairs which are similar to previously displayed image pairs.
2. A receiver according to claim 1 which incorporates a memory arranged to store image differences between the two images of a said pair and processor means arranged to prevent the repeated display of image pairs with the same image differences.
3. A transmitter arranged to transmit, for use in a broadcast spot-the-difference game, at least one pair of images which are similar but which differ in least one respect, the transmitter comprising means for blocking the transmission of image pairs which are similar to previously displayed image pairs.
4. A transmitter according to claim 3 which incorporates a memory arranged to store image differences between the two images of a said pair and processor means arranged to prevent the repeated transmission of image pairs with the same image differences.
5. Games playing apparatus for playing a spot-the-difference game or the like, the apparatus comprising image-processing means arranged to receive two similar input images and to generate a mixed output image from said similar images, selection means operable by the player to identify perceived characteristics of said output image, and means for generating an output signal indicative of the identification of perceived characteristics made by the player.
6. Apparatus according to claim 5 wherein said image-processing means is arranged to transfer selectively features from at least one of said similar images to generate said mixed image.
7. Apparatus according to claim 6 wherein said image-processing means is arranged to vary the selection of transferred features to generate different output images from a given pair of input images.
8. Apparatus according to claim 7 wherein said image-processing means is arranged to vary said selection in dependence upon a previous selection from the same pair of input images.
9. Apparatus according to claim 7 or claim 8 wherein said image-processing means is arranged to vary said selection in dependence upon a random or pseudo random variable.

10. Apparatus according to any preceding claim wherein said image-processing means is arranged to process two similar video input streams and to generate a mixed video output stream therefrom.
11. Apparatus according to any preceding claim which comprises a receiver arranged to receive two similar broadcast images as input images and to generate said output image therefrom.
12. Apparatus according to any preceding claim having means for generating prizes and means to control the play in accordance with the success of a player in correctly identifying the requisite characteristic of the displayed image in order to maintain a predetermined ratio of income to pay-out.
13. Apparatus according to any preceding claim comprising means for transmitting said output signal to a remote location.
14. Apparatus according to claim 13 comprising means for receiving a scoring signal from a remote location.
15. Apparatus according to any preceding claim comprising timing means arranged to measure the time taken by a player to identify said perceived characteristics.
16. Apparatus according to any preceding claim for playing a spot-the-difference game wherein said display means is arranged to display a further image derived from one or both input images and said selection means is operable by the player to identify perceived differences between said output image and further image.
17. A transmitting arrangement for broadcasting a spot-the-difference game programme or the like, the transmitter being arranged to process two similar video input streams to generate a mixed output video stream and to vary the mixing between the video input streams, thereby to generate more than one video output stream from the same pair of video input streams.
18. A transmitting arrangement according to claim 17 which is arranged to transfer selectively features from at least one of said similar video input streams to generate said video output stream .
19. A transmitting arrangement according to claim 18 which is arranged to vary said selection in dependence upon a previous selection from the same pair of video input streams.
20. A transmitting arrangement according to claim 18 or claim 19 which is arranged to vary said selection in dependence upon a random or pseudo random variable.
21. A transmitting arrangement according to any of claims 17 to 20 which is arranged to

receive signals from remote players indicative of a perceived characteristic of the video output stream and to score said signals on the basis of a comparison with an actual characteristic of said output stream.

22. A method of processing two similar input images to generate a mixed output image for use in a spot-the difference game or the like, wherein features of the input images are selectively transferred to the output image and the selection is varied to enable more than one output image to be generated from a given pair of similar input images.

23. A method as claimed in claim 22 wherein the similar input images are frames of respective video input streams and the output image is a frame of a video output stream, whereby varying said selection enables more than one video output stream to be generated from a given pair of similar video input streams.

24. A method as claimed in claim 22 or claim 23 when implemented in a transmitter arrangement as claimed in any of claims 17 to 21.

25. Games playing apparatus substantially as described hereinabove with reference to the accompanying drawing.



INVESTOR IN PEOPLE

Application No: GB 0103957.7
Claims searched: 1-4 & 10-16

Examiner: Mark Sexton
Date of search: 30 July 2001

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.S): A6H HLM; H4T TBAG
Int Cl (Ed.7): A63F 13/00
Other: Online: WPI, EPODOC, JAPIO. Internet: Search conducted through Google

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2284560 A (MUZAFFAR & GOODE)	
A	GB 2271262 A (MUZAFFAR & GOODE)	
A	GB 2252705 A (ROLLINSON)	
A	GB 2231189 A (CORK AMUSEMENT)	
A	GB 2229371 A (MCARTHUR)	
A	WO 97/10578 A1 (NSM AKTIENGESELLSCHAFT)	
A	http://www.indiaparenting.com/funtime/difference/indexpage.shtml	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.